

Clinical Manifestations of Dengue and Dengue Hemorrhagic Fever

Dengue Clinical Syndromes

- Undifferentiated fever
- Classic dengue fever
- Dengue hemorrhagic fever (DHF)
- Dengue shock syndrome (DSS)

Undifferentiated Fever

- May be the most common manifestation of dengue
- Prospective study found that 87% of students infected were either asymptomatic or only mildly symptomatic
- Other prospective studies including all age-groups also demonstrate silent transmission

Clinical Characteristics of Dengue Fever

- Fever
- Headache
- Muscle and joint pain
- Nausea/vomiting
- Rash
- Hemorrhagic manifestations

Signs and Symptoms of Encephalitis/Encephalopathy Associated with Dengue Infection

- Decreased level of consciousness:
lethargy, confusion, coma
- Seizures
- Nuchal rigidity
- Paresis

Hemorrhagic Manifestations of Dengue

- Skin hemorrhages:
petechiae, purpura, ecchymoses
- Gingival bleeding
- Nasal bleeding
- Gastro-intestinal bleeding:
hematemesis, melena, hematochezia
- Hematuria
- Increased menstrual flow

Clinical Case Definition for Dengue Hemorrhagic Fever

4 Necessary Criteria:

- Fever, or recent history of acute fever
- Hemorrhagic manifestations
- Low platelet count ($100,000/\text{mm}^3$ or less)
- Objective evidence of “leaky capillaries:”
 - elevated hematocrit (20% or more over baseline)
 - low albumin
 - pleural or other effusions

Clinical Case Definition for Dengue Shock Syndrome

- 4 criteria for DHF
- Evidence of circulatory failure manifested indirectly by all of the following:
 - Rapid and weak pulse
 - Narrow pulse pressure (≤ 20 mm Hg) or hypotension for age
 - Cold, clammy skin and altered mental status
- Frank shock is direct evidence of circulatory failure

Four Grades of DHF

■ Grade 1

- Fever and nonspecific constitutional symptoms
- Positive tourniquet test is only hemorrhagic manifestation

■ Grade 2

- Grade 1 manifestations + spontaneous bleeding

■ Grade 3

- Signs of circulatory failure (rapid/weak pulse, narrow pulse pressure, hypotension, cold/ clammy skin)

■ Grade 4

- Profound shock (undetectable pulse and BP)

Danger Signs in Dengue Hemorrhagic Fever

- Abdominal pain - intense and sustained
- Persistent vomiting
- Abrupt change from fever to hypothermia, with sweating and prostration
- Restlessness or somnolence

Martínez Torres E. Salud Pública Mex 37 (supl):29-44, 1995.



Warning Signs for Dengue Shock

Four Criteria for DHF:

- Fever
- Hemorrhagic manifestations
- Excessive capillary permeability
- $\leq 100,000/\text{mm}^3$ platelets

Initial Warning Signals:

- Disappearance of fever
- Drop in platelets
- Increase in hematocrit

Alarm Signals:

- Severe abdominal pain
- Prolonged vomiting
- Abrupt change from fever to hypothermia
- Change in level of consciousness (irritability or somnolence)

When Patients Develop DSS:

- 3 to 6 days after onset of symptoms



Signs and Symptoms in 57 Hospitalized Cases of DHF, Puerto Rico, 1990 - 1991

SIGNS AND SYMPTOMS	FREQUENCY*	PERCENT
Fever	57	100 %
Rash	27	47.4%
Hepatomegaly	6	10.5%
Effusions	3	5.3%
Frank shock	3	5.3%
Coma	2	3.5%
Any hemorrhage**	57	100 %

* Minimum estimate, search was not uniform for all patients

** Only 2 (3.5%) cases had severe hemorrhagic manifestations



Hemorrhagic Signs and Symptoms in 57 Hospitalized Cases of DHF, Puerto Rico, 1990 - 1991

SIGNS & SYMPTOMS	FREQUENCY*	PERCENT**
Microscopic hematuria	28	51.9%
Petechiae	26	45.6%
Epistaxis	13	22.8%
Gingival hemorrhage	8	14.0%
Blood in stools	8	14.0%
Positive tourniquet test	5	31.3%

* Minimum estimate; the search was not uniform for all patients

** Percents were calculated using the number of patients among whom each symptom was sought as the denominator



Hemorrhagic Signs and Symptoms in 57 Hospitalized Cases of DHF, Puerto Rico, 1990 - 1991

SIGNS & SYMPTOMS	FREQUENCY*	PERCENT
Blood in vomitus	4	7.0%
Bleeding at venipuncture	4	7.0%
Hemoptysis	3	5.3%
Vaginal hemorrhage	2	3.5%
Gross hematuria	2	3.5%
Other hemorrhage**	2	3.5%

* Minimum estimate; the search was not uniform for all patients

** Only 2 (3.5%) cases had severe hemorrhagic manifestations



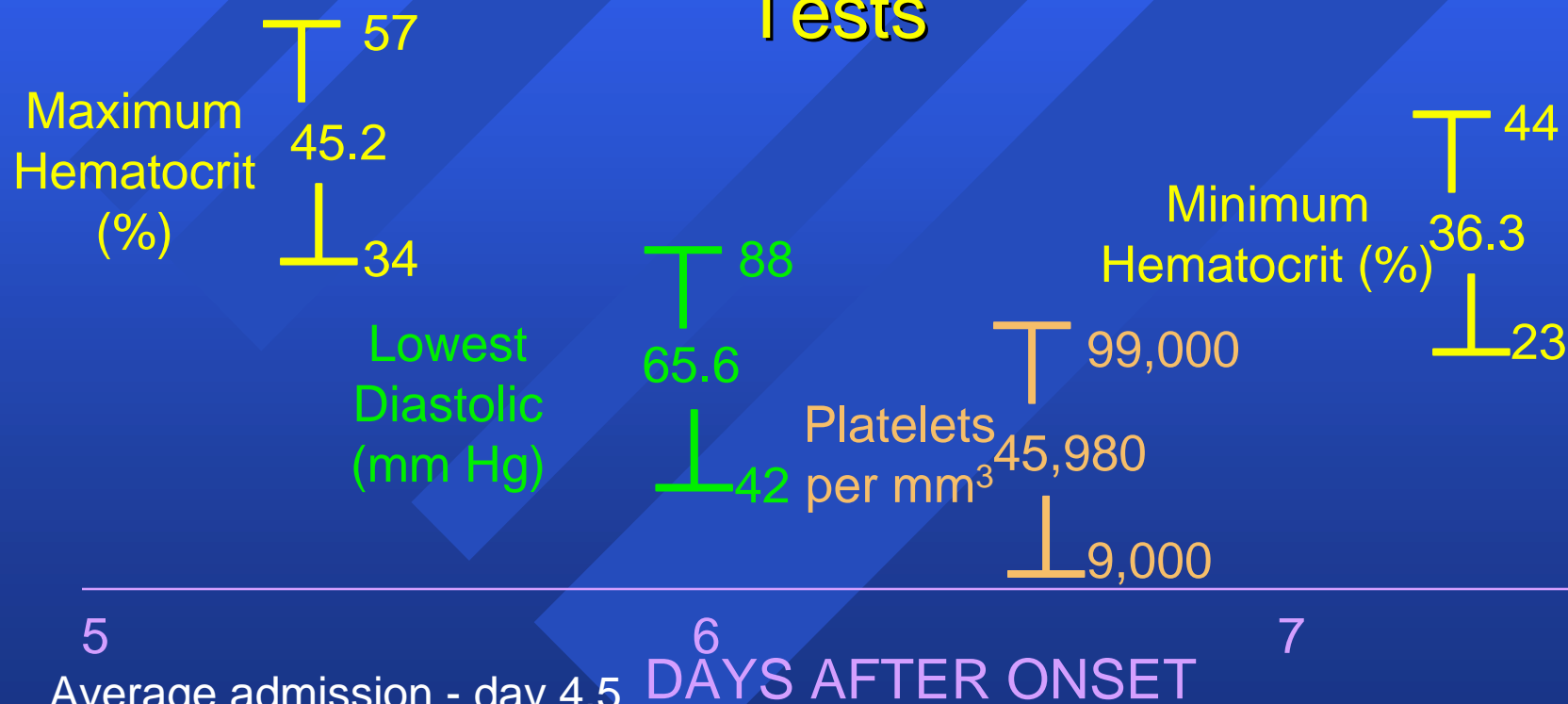
Clinical Laboratory Analyses in 57 Hospitalized Cases of DHF, Puerto Rico, 1990 - 1991

Test with Abnormal Result	Frequency*	Mean Result (Range)
Thrombocytopenia Platelet count	57/57 (100%)	45,980 (9 - 99,000)
Increased Capillary Permeability Hemoconcentration ≥ 0.20	34/57 (59.6%)	0.26 (0 - 1.0)
Low serum protein	18/51 (35.3%)	6.3 (3.8 - 8.3)
Low serum albumin	35/52 (67.3%)	3.5 (2.3 - 4.9)

* Average result in the tested cases

Profile of the Progression of Illness

Mean Days from Onset of Symptoms, and
Mean Value (± 2 SD) of Selected Clinical
Tests



Average admission - day 4.5

Average discharge - day 11

Puerto Rico, 1990-1991 (N=57 patients)

Unusual Presentations of Severe Dengue Fever

- Encephalopathy
- Hepatic damage
- Cardiomyopathy
- Severe gastrointestinal hemorrhage